Flightfax

ARMY AVIATION
RISK-MANAGEMENT
INFORMATION

June 2001 ♦ VOL 29 ♦ NO 6

http://safety.army.mil

Over water missions—Ready or Not?

Over water incident could have been a lot worse...

"Army units are routinely being tasked to conduct over water missions for which they are not properly trained or equipped," notes Brigadier General Gene LaCoste, Director of Army Safety. Many units do not possess appropriate protective clothing, or flotation devices, and few are appropriately trained.

A recent accident illustrates the point. During over water flight, an OH-58D aircraft was forced to ditch. While the crew was fortunate in having search and rescue craft in the immediate area, and spent very little time in the water, they still suffered hypothermia injuries.

In this Flightfax, we will look at various aspects of this issue, and try to provide you with some starting points if you are tasked for an overwater mission.

Risk Management Can Work.

How we got into the over water business

We have all heard it. "The train is moving fast," "Our plate is full," and all the creative comments in that vein. More and more, our training calendar pushes the training pace and sets the tone for the company level and below. Many times the line pilots wonder if staff members even look at the tasking before passing it along. Doesn't the Army know how much detail and planning has to go into aviation operations? Why don't they apply to their level what they want us to do at the line?

Well, they do. We just don't see it all the time. Here is a good example of how risk management can work and why it is so important to be involved in the planning process.

THE MISSION

During the first week of holiday block leave and already on a half-day schedule, the unit received initial warning that it would be required to support the Joint Shipboard Helicopter Integration Process (JSHIP) mission with two OH-58D aircraft and crews and armament soldiers. This was not a standard tasking, but one that would involve many unfamiliar aspects of planning and execution. The purpose of the test was to evaluate non-naval helicopter units operating from a Carrier class ship in order to identify any compatibility, procedural or training issues associated with the shipboard operations. A significant portion of this test was to evaluate Army ordnance handling and to develop procedures, methods and controls to safely embark, load, fire, download and disembark Navy ships with this ordnance.

The majority of the unit and most of the key staff officers had already departed on leave or were in the process of departing for the holidays. The unit was not flying or training during block leave. The limited staff remaining requested relief from

the tasking but began an immediate mission analysis in the event relief was not granted. This initial analysis was accomplished because the training requirements for the mission would begin the week the unit was to return from block leave.

THE ANALYSIS

The staff analysis revealed the unit had not trained or conducted over water operations since deploying to Haiti in 1994. Over water operations was not a METL task of the unit. Only five aviators in the battalion had experience with over water missions and not all were available for the mission. The unit did not have sufficient ALSE equipment for over water operations. The initial analysis, including a risk assessment, put the mission in the extremely high-risk category. By SOP, extremely high-risk missions required division commander approval in order to execute. The major hazard identified during the mission analysis was crewmember fatality from drowning or exposure.

Over water operations was not a METL task of the unit. Only five aviators in the battalion had experience with over water missions and not all were available for the mission.

THE CONTROLS

The following control measures were planned to mitigate the risk down to a medium risk mission. The special staff, specifically the Safety Officer and Standardization Officer, was involved early in the planning process, adding to the success of developing a comprehensive set of control measures. All of these control measures were briefed through the entire chain of command including the commanding general.

- Increase the tasking to at least a platoon level mission. Desired a company level training event.
- All crewmembers would wear a Life Preserver Unit (LPU).
- All participants would pass a Navy standard swim test and Army drown proofing.
- All crewmembers would complete HEEDs and Dunker Qualification. It was desired that all ground support personnel attend this training.
- All crewmembers would wear 'Constant Wear' anti-exposure suits.
- SAR aircraft will be in the air, not on standby, during operations. Aircraft would only operate multi-ship.
- No night or NVG training would be conducted over water.
- Aircraft would operate only under VFR (1000/3) conditions and above 300 feet Above Water Level (ABL).
- Aircraft door armament side panels would be removed.
- All crewmembers would complete "deck landing" qualifications under day, night and NVG conditions.
- All participants would receive academic and hands on ALSE training.
- Capitalize on battalion and brigade over water experienced aviators. Desired an over water experienced crewmember on each aircraft.
- Communications between the company and battalion commander would be maintained throughout the duration of the mission.
- Seek strategic airlift to gain more training time and to train on METL tasks of deploy and redeploy.

ANATOMY OF AN ACCIDENT

Each accident is a sequence of other events that lead to the eventual accident. Eliminate any of those events, and the incident will not happen or the result will be less severe. Here is the summary of what happened.

A flight of three OH-58D(I) aircraft with a trailing SH-60 SAR aircraft departed at 0930 en route to land on an aircraft carrier located approximately 70 NM offshore.

At approximately 1008, while at 93 knots, 300 feet above water level approximately 58 NM from the departure point and 15 NM from the carrier, the crew in chalk three heard a loud report from the rear of the aircraft. This report was immediately followed by a very noticeable high frequency vibration, and a 10-15 degree right and left yaw of the aircraft nose. The PI, a maintenance officer and maintenance examiner joined the PC, the company safety officer, on the controls and began assessing aircraft controllability as well as

airworthiness.

The PC made an emergency call on UHF to the ship, which was received and acknowledged by both the tower and SAR aircraft. The PI attempted to contact the flight on the FM radio; this call was not received by either of the two remaining aircraft. The PC adjusted the airspeed in an attempt to regain control of the aircraft. Approximately 12-15 seconds later, the crew heard an even louder report from the rear of the aircraft followed immediately by a 90–120 right yaw, a nose pitch down, and a left roll. This placed the aircraft in a near out of control situation. The PC unsuccessfully attempted to fly into the turn in an attempt to regain control of the aircraft. He immediately decreased the throttle and lowered the collective, entering an autorotative flight profile. The crew regained control of the aircraft and began preparing for impact.

The PC passed the flight controls to the more experienced PI during the autorotation and immediately began PI duties. The PI decelerated at about 100 feet and allowed the tail of the aircraft to make contact with the water. As the tail contacted the water, the PI pulled the remaining collective and reduced the throttle to the idle position. The aircraft settled into the 69 degree Fahrenheit water with minimum forward momentum and settled upright without any collateral damage. The aircraft settled to the left rear, the main rotor blades contacted the water and the aircraft began to sink.

Both crewmembers exited through the right door into the water and waited to be extracted.

At 1013 the SAR aircraft began extraction of the crewmembers and recovered them to the aircraft carrier at 1035. The crewmembers were immediately rushed to awaiting emergency medical personnel who diagnosed them with mild hypothermia. The reason for loss of the aircraft remains under investigation.

THE REST OF THE STORY

The crew's survival was a direct result of their training and solid risk management by the chain of command. A review of the 14 control measures planned revealed that, for this mission, 10 were fully implemented, one control measure was not implemented, and three control measures were partially implemented. The only injuries directly resulted from the partial implementation of one of these critical control measures.

■ All crewmembers would wear 'Constant Wear' anti-exposure suits. Partially implemented. The water temperature was above 60 degrees Fahrenheit. The crew of the accident aircraft felt they were within regulatory and command guidance not to wear the suits.

The other partially implemented controls were:

■ Increase the tasking to at least a platoon level mission. Desired a company level training event. **Partially Implemented.** The Battalion desired a minimum of 6 aircraft to deploy as a company task force augmented by AVUM and armament soldiers. 4 aircraft were approved for the mission due to storage requirements on board the aircraft carrier. Due to maintenance, one of the scheduled 4 aircraft did not deploy on this mission.

■ All crewmembers would qualify "deck landing" under day, night and NVG conditions. **Partially Implemented.** 4 of the 8 qualified day only.

■ The only identified control that was not implemented was:

■ Seek strategic airlift to gain more training time and train on deploy and re-deploy METL tasks. **Not Implemented.** U.S. Air Force aircraft were unavailable to execute the mission.

The crew's survival was a direct result of their training and solid risk management by the chain of command.

This is a success story of how staff integration in the risk management process pays off. From concept until the AAR, complete staff integration was key to the planning process. Decisions regarding controls were brought to the Commander. The Commander took the data and made educated decisions. He accepted the residual risk after applying good risk management. The bottom line—two crewmembers are alive today because of risk management, a process that really does work.

—Lt.Col Scott Larese, Commander, 1st Battalion (ATK), 10th Aviation Fort Drum, NY 13602, DSN 341-3806 (315) 772-3806, scott.larese@drum.army.mil

So you've got an overwater mission?

Here are some hints to get you started, from someone who has been down this watery road before.

1. TRAIN, REHEARSE, TRAIN SOME MORE

Over water and shipboard training should not be conducted on a whim or for "adventure" type training. The unit should have this type of training identified in their unit METL and their unit individual and collective training programs should focus on this type of training. When tasked for missions of this type, the unit must assess their training and resources to ensure quality training can be conducted and the training is not rushed.

Develop unit-training criteria to determine who is over water qualified. What is the minimum NVG mission training time an individual needs before he or she is "qualified"? What weather minimums will the unit use for training and actual missions? What is the minimum mission essential equipment list required? What phraseology will you use? What are over water crew coordination measures that are different from normal missions? What altitude restrictions will you use to train and conduct operational missions? Develop any new crew endurance factors for over water flight.

Dunker and HEEDS classes are great training, but this is a sterile, classroom environment compared to an actual emergency. Most units with good over water training programs will actually train in open water. Get in all your ALSE gear and actually get extracted on a hoist or ladder. Doing it under rotor wash or in the surf is much different from the pool. Does your SOP cover how to do this? What signals will you use? Have you practiced it at night also?

Develop mission abort criteria and stick to it; i.e., mission critical malfunctioning equipment, loss of navigation equipment or vectoring capability, or loss of visible horizon in more than 2 quadrants, minimum fuel state, winds or sea state.

Know the effects of Electromagnetic Interference and expect it. Know what the ship emits and what frequency. Know how this can affect your aircraft and have a plan to report it. Every aircraft can be affected differently (even if it has been EMI tested).

Know how to conduct an air-to-air link up at a point in space over water. Learn to use the air-to-air TACAN mode if equipped. When using an Attitude Heading Reference system or Doppler, remember that accuracy of the system can be degraded after prolonged flight over water.

2. EMERGENCIES HAPPEN

Always brief a divert or emergency plan when conducting long flights over water. Know the distance and

bearing to this location at all times. Keep in mind if your objective is a ship, it may have moved due to unforeseen circumstances.

Discuss emergency procedures before training over water. Know the difference and consequences of landing as soon as possible and landing as soon as practical. This can mean the difference between successfully recovering the aircraft and ditching the aircraft for what might have been a minor problem. The fuel you conserve—see hint Number 3—can be vital.

Avoid flying single ship if possible. Your wingman may be your only hope of rescue or rescue coordination. Have a plan for backup SAR of self-extraction within your flight.

3. FUEL IS LIFE

Always know your exact time until splash. Know your exact fuel state in hours and minutes and keep any ship or controlling aircraft informed. Checking the fuel every 30 minutes is not enough. If a vectoring or controlling agency asks you to hold or "drop anchor." throttle back on the power to conserve fuel. Holding at 60 knots burns less fuel than holding at 100 knots. You're not going anywhere since they ask you to hold, so why burn a lot of gas? Any fuel you save can buy you time in an emergency; time to think about the emergency and develop a plan or time to get to another location.

4. OH SAY CAN YOU SEE?

Review vestibular and ocular illusions. You may encounter illusions you may not have seen in a while. Light and depth perception illusions are very likely over the ocean.

Have a plan for inadvertent IMC and multiship IMC breakup. What altitude will you use? Practice an Emergency Low Visibility Approach (ELVA) to a ship before you have to use it in an actual emergency.

Develop and rehearse a lost commo scenario. What do you do if you have lost commo and lost NAV?

Learn how to recognize small commercial or recreational boat radars on your radar-warning receiver.

5.THE NAVY IS DIFFERENT

Smaller ships such as FFGs and DDGs do not have tugs like larger flat top ships. Hangars and decks are often small and restricted movement areas. Set up an area in your hangar or on your ramp that replicates the dimensions and markings of the ship hangar. Practice spotting the aircraft within these dimensions and conduct blade folding, chalking, tie down, etc. Make everyone practice dressed in their float coats and cranials. Once you do it in the daytime, practice it at night also. Every member of the handling team or blade unfolding team must know their exact position and duties and who is directing them.

Learn the capabilities and limitations of Navy ships and aircraft. Know how far their radars and communications can reach, how low and how high? How are they affected by atmospheric conditions? What is their steaming speed in an emergency? What sort of surveillance and electronic capabilities do they have? How can this help you in an emergency or from a tactical aspect?

The Navy operates under strict IFF procedures and even ships use transponders. Review all the procedures and know how to use all your aircraft IFF equipment. Make sure it is operational.

6. WATER IS DIFFERENT FROM LAND

Learn how to acquire and read nautical charts. They can identify things such as general water depths, lights and buoys, oil drilling rigs, surface obstructions, etc.

Use caution when using FLIR and pilotage FLIR systems. The performance of these systems can be degraded over water and they can be affected by EMI.

7. ALSE

Know where everything is located in your survival vest and how to use it. Make sure all your important signaling devices are tied to your vest. If you carry a military angle head flashlight clipped to your vest, remember that it can easily be mistaken for your HEEDS bottle in a dark, underwater cockpit.

Remember that your helmet is connected to the ICS cord, NVG power supply, your HUD or PNVS HDU and these items may impede your ditching or underwater egress.

Use caution when wearing body armor. Lightweight, body conforming police type body armor may be a better option if you have a requirement for over water contingency missions.

Make sure your aircraft are equipped with water activated underwater pinging beacons if your unit has a continuing over water mission.

Immersion suits may or may not be required. AR 95-1 states that when water temperatures are below 60 degrees Fahrenheit, commanders must develop a program regarding wear of immersion suits. Experience suggests that water temperatures above 60 degrees Fahrenheit can still be dangerous and units must address them. Get your flight surgeon involved. Also, you must understand that there are several different types of suits available and proper fitting is paramount in their effectiveness.

8. MAINTENANCE

Pay close attention to maintenance procedures in the ship hangar, especially power on electrical checks. Develop standard procedures for disconnecting batteries, pulling igniter circuit breakers, etc. Aircraft engines can, and have been, accidentally started with blades folded in ships hangars. When conducting post flight engine flushes and run ups, always insure blade-folding locks are secure before engaging engines and rotors.

CONCLUSION

This is just a laundry list to get you thinking about things connected with taking on an over water mission. Be sure to get your command involved at the highest levels possible, to ensure you get the support needed to successfully conduct over water missions.

This is not an all inclusive list. Units tasked with over water missions should conduct a complete risk assessment and develop appropriate control measures before embarking on any over water training program.

—Major Mike Cumbie, Chief, Scout/Attack Branch, USASC, DSN 558-3754. (334) 255-3784 cumbier@safetycenter.army.mil

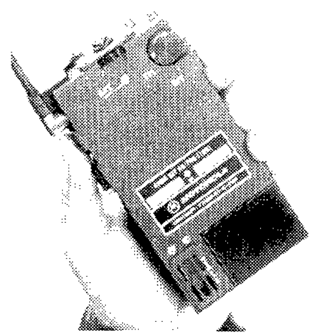
AN/PRC-112 Survival Radio upgrade process

The AN/PRC-112 Survival Radio has three identified issues which may contribute to a degradation of the radio's operational readiness for the soldier in the field.

1. The large VOL/OFF knob can accidentally be turned on when the radio is handled. If turned on, it will lead to a dead battery.

2. Water has been reported to leak into the radio's case, rendering the radio inoperable.

3. Chance frequency hopping due to the design of the radio's transponder may yield less reliable communications.



There is an upgrade program for the AN/PRC-112 currently underway which addresses each of these issues:

1. The current VOL/OFF knob is replaced with a smaller knob that is more difficult to accidentally turn on.

2. A new, better gasket that stops the water intrusion is installed.

3. A more efficient transponder is installed that corrects chance frequency hopping.

Upgrades are already in progress. It is important to identify if your radio has been upgraded or not. If radio's NSN is 5820-01-458-6018, then radio has been upgraded. If radio's NSN is 5820-01-279-5450 *and* a Tobyhanna Army Depot (TYAD) sticker has been added, then the radio has been upgraded. If the NSN is 5820-01-279-5450 and there is *no* TYAD sticker, then the radio needs to be upgraded. Contact CECOM at DSN 992-1191 or (732) 532-1191 or e-mail them at: **bruce.jetter@mail1.monmouth.army.mil** for instructions on how to begin the process.

—David Venezia, Safety Engineer, CECOM, DSN 992-0084 X 6439 (732) 532-0084 x 6439, david.venezia@mail.monmouth.army.mil

ALSE over water issues

From time to time, *Flightfax* hears from the field. A lot of what we are hearing lately has to do with ALSE, and specifically, the lack of Aviation Life Support Equipment (ALSE) needed to safely support mission performance, specifically over water missions.

Some of the questions raised include:

Where are we going to get all the necessary equipment and tools?

Who is going to inspect that equipment?

Who is going to maintain that equipment?

We went to the source—the Project Manager's office for Aircrew Integrated Systems, for some answers. Here is the response.

Response from the PM

The Product Manager's Office, Aircrew Integrated System (ACIS), does not dispute the fact that Aviation Life Support Equipment (ALSE) is not where it should be for today's aviation warfighter. However, while the ALSE System may appear on the surface to have significant problems we feel that the team approach already underway will make ALSE better. We in PM ACIS work hard with the ALSE user in the field, the other Army and DOD developers of ALSE equipment and the Director of Combat Developments (DCD) at Fort Rucker, AL, to ensure the best ALSE support is provided for the resources allocated.

To answer the mail, PM ACIS is developing the Air Warrior ensemble that provides for the long-term solution to many ALSE problems. This ensemble will provide the aircrew and aviation commanders a highly flexible, modular and state-of-the-art system that will provide each aviation warfighter the ability to perform over water, high altitude, climatic (hot & cold), and night missions in a clean or a Nuclear, Chemical and Biologically (NBC) contaminated environments where the threat levels are changing rapidly.

Over-water missions seem to be particularly troublesome at this time, but they won't be very soon. The Air Warrior system will provide each aircrew member with a low-profile (read: one that won't knock your HDU off) floatation collar; a removable, improved and much thinner raft that can integrate with all Army rotary-wing aircraft seats; and an air breathing device equipped with a hose for ease of use and comfort. These pieces can support either unit training or combat missions in an over water scenario.

In the interim, PM Soldier is in the process of fielding a replacement for HEEDS (Sea Mark II) and that system will be integrated with the AW ensemble. The command will have on-hand (or at the depot) all the items necessary to rapidly support the mission in the field, no matter where the unit is or what type of missions the unit is originally designated to have. Air Warrior will provide unprecedented flexibility to every unit. The Air Warrior program is in the testing phase of Engineering and Manufacturing Development (EMD) stage of the acquisition life-cycle model, with production to begin in 2003. This effort by no means is the silver bullet fix for ALSE, but the fielding of Air Warrior will be conducted from and is funded for the total package fielding (TPF) approach. This

Air Warrior

Survival Equipment Subsystem

NBC Protection

Microclimatic Cooling System

Clothing Items

- Modified ABDU,
- Aircrew Cold Weather system

Modular Integrated Helmet Display system (MIHDS)

Over Water missions -

- Advanced Anti-Exposure system
- Integrated Raft
- Survival Egress Air
- Flotation Device

Wireless Intercom

Electronic Data Manager (EDM)

approach will ensure Air Warrior comes with training, manuals, and a support package and that the technician at the battalion level can maintain this equipment.

The training approach ensures that the TRADOC schools will be updated before the equipment is fielded and that the ALSE technicians already in the field will receive an exportable training package that contains Computer Based Training for sustainment of the legacy ALSE equipment as well as Air Warrior. We currently have a contract with a local vendor who is developing this Computer Based Training for legacy ALSE equipment right now and will soon begin work on the Air Warrior equipment.

The Air Warrior manual will be a compilation of new and legacy systems so the ALSE technicians will have a one-stop manual for ALSE used by Army aircrews, regardless of the original service or manufacturer.

Finally, an extensive MOS skill and inspection criteria scrub has already been undertaken to ensure that the unit ALSE technician's workload will not be increased by the Air Warrior equipment. No additional tasks will be required of the ALSE technicians because this system will be integrated and standard inspection criteria will be established. This is an issue we know is dear to all the hearts of *Flightfax* readers.

With the large increase in capability (especially in NBC environments) that the Air Warrior system provides, there is some increase in maintenance, but not at battalion level. The largest maintenance burden stems from the Microclimate Cooling Unit (MCU) that will be maintained by trained 52Cs at AVIM or division level.

In conclusion regardless of how the state of ALSE equipment appears in some units, we can tell you this office, PM ACIS, and other Army and sister-service material developers, are working hard and have had success ensuring ALSE is improved for the user now through initiatives like the Soldier Enhancement Program and the ALSE IPT, and will be improved in the near future through the Air Warrior program.

—John Jolly, PM-ACIS, Redstone Arsenal, AL 35898,DSN 897-4262, (256) 313-4262 John.Jolly@peoavn.redstone.army.mil

Accident Scene Preservation

"CW2 Smith, the XO just called and said for you to start recovering aircraft 12345 that had the bird strike and landed in the field just off the reservation. The old man will be appointing an investigation board tomorrow to take a look at the aircraft once you get it back to the hangar."

What is wrong with the above fictitious scenario? Odds are that right now, somewhere in the Army a unit is facing a similar event, such as a bird strike, tree strike, or minor mechanical failure that would require an accident investigation board to be convened.

If you don't know what is wrong with the battalion XO or Commander directing the recovery of an aircraft (or for that matter an Army vehicle) then read AR 385-40: *Accident Reporting and Records*. Physical evidence at the accident site—such as ground markings, damage, position of the aircraft, and equipment settings — can provide vital clues to determining the cause of the accident. A board investigates all Class A and B accidents and Class C aircraft accidents. Generally speaking, only the appointed Board president can release an aircraft/vehicle for recovery from an accident scene. This includes performing minor maintenance actions on the aircraft or vehicle without the express permission of the Board president.

Most Army accidents (both aviation and ground) are Class C-F and will be investigated by a local Installation Accident Investigation (IAI) board or individual designated by the commander. The Army Safety Center will be involved with Class A and selected Class B accidents under what is called a Centralized Accident Investigation (CAI) and will provide the President of the Board and the Board Recorder. Whether the investigation will be conducted locally or by the Army Safety Center, units must comply with the accident scene preservation procedures listed in AR 385-40 and DA PAM 385-40 (paragraph 2-2). As soon as the safety of any victims or personnel involved is ensured, the accident site should be secured by roping off the area and placing guards around the scene. This safeguards the site from bystanders and the curious. This includes military and civilian personnel who have no business at the scene.

Photographs of the scene, either still or video, will help the board in cases where the scene must be cleared before the board arrives. A sketch or diagram is also helpful. Every effort should be made to portray things as graphically and accurately as possible.

AR 385-40 paragraph 4-5(a) states: "*When the situation permits preservation of the accident scene, only those actions necessary for rescue or recovery of victims and the initial on-site investigation by MP/CID will be allowed. Whenever possible, photographs of the location of victims should be made before the victims are moved.*

Access will be restricted to those commanders and personnel directly involved in investigating the accident. Before the arrival of the accident investigation board at the accident site, MP/CID personnel should remove only those items of evidence which would be destroyed by time or

the elements..." Paragraph 4-5(b) lists specific actions to be taken if the situation does not permit preservation of the accident scene. The crux of this paragraph is to thoroughly document the scene and all actions taken in the recovery of victims so as to facilitate the accident Board's investigation.

Some examples of situations that may not permit preservation of an accident scene include an aircraft landing on a busy roadway or vehicle blocking a roadway. Another example would be an aircraft or vehicle resting in a dry creek bed with thunderstorms and, /or flash flooding imminent.

There are also bad examples of situations that should have permitted accident scene preservation, but a unit chose not to preserve it. For instance: "There was a long weekend coming up and we didn't want to inconvenience the unit with pulling guard duty in the field," or "There was a thunderstorm (snowstorm) forecast and we didn't want to leave the aircraft (vehicle) out in the weather" or "We didn't know that the Safety Center was coming to do the accident investigation."

Regardless of who conducts the investigation, unit safety officers and the chain of command must know how to preserve the accident scene and provide general guidance to local authorities. Installation regulations, local SOPs and pre-accident plans should provide the specific details needed to accomplish the reporting of accidents as well as actions needed to secure the accident scene. Access to the accident scene must be restricted to those commanders and personnel directly involved in investigating the accident to minimize contaminating the wreckage for analysis.

Speaking of pre-accident plans, does your unit's plan cover chain of custody issues? Would the crew involved in the fictitious bird strike example be required to submit to biochemical testing at a local medical treatment facility? How would you transport them?

IAW AR 385-40, crewmembers/personnel will undergo biochemical testing for Class A-C aviation accidents and whenever deemed appropriate by the commander in all other accidents.

Remember to coordinate with your installation safety office and other local agencies to ensure your pre-accident plan reflects the requirements guidelines of AR 385-40 and DA Pam 385-40 and local policies, regulations and guidelines. Securing the accident scene begins with timely and accurate accident reporting and concludes with the accident Board releasing the accident aircraft/vehicle back to the unit and concluding the investigation. Make sure you do it right... the first time.

—Major David Schoolcraft, Chief, Fixed Wing/ Cargo Branch, USASC. DSN 558-9858. (334) 255-9858 Schoolcd@safetycenter.army.mil

Aviation Safety Officer Course

Training for Life

The United States Army Safety Center is responsible for training Aviation Safety Officers for worldwide deployment and utilization. There are three safety programs offered for resident training. The first is the six-week Aviation Safety Officer (ASO) Course. The second is a two-week program preceded by a correspondence phase I course. The third is a one-week Refresher Course. The two and six week courses are Military Occupational Specialty (MOS) producing for warrant officers and Additional Skill Identifier (ASI) producing for officers.

The six-week ASO Course (7K-F12) offers the most comprehensive training and is the most challenging. Two events are unique to this course. The first is an Aviation Accident Prevention Survey (AAPS) conducted at various locations nation wide. The AAPS consists of one week on-site training to conduct surveys, write findings and recommendations, and prepare an out-brief for the participating unit. The survey is extremely beneficial for both the students and the unit. Students develop the skills and techniques to identify hazards in the workplace and the unit receives a free look at their day-to-day operations and safety program. It is a positive experience for all concerned.

The second unique event for the ASO Course is the 9D5 Underwater Egress (Dunker) training. Classes are normally taken to Pensacola NAS for instruction. The swim tests are conducted in flight uniforms, boots, survival vests, and helmets. Successful candidates are then allowed to participate in the Dunker qualification phase. This requires three successful egresses from a submerged airframe mock-up (9D5 device). The third egress is accomplished while wearing blacked out goggles. The 9D5 device first simulates a rapid descent, much like a ditching maneuver in an aircraft. Once contact with the water is made, the device begins to submerge and then rolls either left or right. Only when full submersion is accomplished and the device comes to a complete rest are participants allowed to conduct egress procedures. Most students describe the training as an "eye opening" experience. This description is meaningful in a number of ways.

Sometimes, ASO candidates question the need for Dunker training when they initially sign up for the course. At that point in time they do not understand the relationship between risk management and tempting the hand of fate by seeing how long they can hold their breath. Ironically, end of course critiques always stress the need to keep Dunker qualification as an integral part of safety officer training. A recent accident discussed in this issue firmly establishes the logic behind that perspective.
The successful outcome of this event can be directly attributed to risk management and training, and in fact one of the members of that crew was first Dunker qualified in the ASO course.

This is a success story not only for the unit and crew members, but also for the concept of risk management. The process works when implemented correctly.

So, back to the question of why we conduct Dunker training in the ASO Course. The experience of Dunker training is not only for the benefit of the individual. The insight provided by this training into the hazards associated with over-water operations cannot be duplicated. The ASO leaves the Army Safety Center better prepared for their own survival and better capable of providing solid risk management advice to their commanders. The ASO Course is a proactive approach to safety.

—CW4 Don Wright, US Army Safety center,
DSN 558-2376, (334) 255-2376 wrightd@safetycenter.army.mil

Unresolved issues

After an accident occurs in which materiel factors are suspected, many questions are typically left unanswered. One of the ways questions are answered is by sending components suspected of materiel failure for teardown analysis.

When submitting category 1 Product Quality Deficiency Reports (PQDR) for equipment or components suspected of defects that are believed to have contributed to an accident, be sure to enter code 8 in Block 22 of the PQDR, and in addition, state that the equipment is an ACCIDENT EXHIBIT. That alerts those providing equipment disposition instructions that a teardown analysis is required. This ensures that appropriate equipment disposition instructions are provided for teardown analysis of the equipment to determine the source of failure. Let's do our part to see that the materiel failure causes are identified and corrective actions initiated to prevent future accidents.

—Ray Kennamore, US Army Safety Center, DSN 558-3493 (334) 255-3493, kennamor@safetycenter.army.mil

Risk Management Integration: Key to Sustained Accident Prevention Success

The Army achieved steady gains in safety from the late 1980s through the mid-1990s by implementing the five-step risk-management process as its principal risk-reduction tool. From 1996 through mid-year 2001, there have been several short-term up and down trends, but basically accident rates in most categories have leveled out. To achieve and sustain additional gains in safety, we must close the gap that still exists in the full integration of risk management into Army culture.

The Army's current safety performance news is both good and bad. Total Class A accidents are about 12 percent below the three-year average, but fatalities are up about 9 percent. On a very positive note, privately owned vehicle (POV) accidents—notoriously the number one killer of soldiers—are 28 percent below the three-year average, with fatalities also dropping 26 percent (57 in FY 00 to 42 at mid-year FY 01). However, total Army fatalities have increased from 79 at mid-year FY 00 to 87 in FY 01. Aviation was a huge safety success story last fiscal year (in fact, our best year ever), but we have had eight Class A aviation flight accidents already compared to four for the same time period last year, which is almost 15 percent above the three-year average. The real tragedy is that these 8 accidents resulted in 11 Army fatalities and 18 Air Force fatalities, compared to 2 Army fatalities for the previous year. Personal injury accidents (for example, gunshot wounds, carbon monoxide poisonings, and drownings) have also increased and resulted in 19 fatalities, compared to 12 in FY 00.

Analysis of both aviation and ground data shows that accidents are occurring because of indiscipline. This is demonstrated in three major areas—a lack of leader involvement and therefore, the ability to effectively manage risks, failure to maintain rigorous training standards, and failure to maintain and enforce discipline. All three areas are well within our ability as an Army and as individuals to affect.

Armywide initiatives to further embed risk management into all missions include the following:

■ Identifying opportunities to integrate risk management into the Army through Army Transformation and aligning

the Army Safety Strategic Plan with the Transformation Campaign Plan.

■ Continuing aggressive efforts to institutionalize risk management into all aspects of doctrine, training, leader development, materiel development, organizations, and soldier systems.

■ Partnering with industry organizations recognized for their world-class safety programs.

■ Ensuring that soldiers from initial entry through division commanders receive initial and sustainment risk management training.

■ Initiating a Department of the Army Inspector General (DAIG) review of risk management integration in units across the Army.

Safety Center initiatives to help leaders become more proficient in making risk decisions include the following:

■ Enhancing the Safety Center's Web-based Risk Management Information System to provide commanders with near real-time access to hazards, risks, and controls information and as a medium for sharing lessons learned.

■ Increasing the number of Safety Center NCO professional development mobile training teams to teach risk management to NCOs and junior officers. To date, some 1,900 Active, Reserve, and National Guard soldiers have received risk-management training through this program.

■ Fielding assistance visit teams from the Safety Center to help commanders assess their safety programs and help them see where they need to focus resources to best control unit hazards.

■ Enhancing cradle-to-grave system safety initiatives in our weapon systems.

■ Supporting the DAIG in reviewing risk management integration in units across the Army.

■ Assisting the Army Aviation Center in integrating risk management into simulation-based aviation training exercises, Army Training and Evaluation Program mission training plans, and the captain's career course.

Individual initiatives that each of us can undertake to ensure that risks are managed effectively in our units and organizations include the following:

■ Emphasizing to soldiers the importance of executing each mission to the risk management standard--an informed decision at the appropriate level.

■ Providing constant reminders to soldiers that a risk assessment is not an end state; it is only the first two steps of risk management. Controls must be developed and put in place, and hazards must be identified and assessed and reassessed as missions and conditions change.

■ Making sure that you and your key personnel are at the right places at the right times to make risk decisions.

■ Mentoring junior leaders, teaching them what right looks like, and helping them gain the experience and wisdom to effectively manage risks.

■ Demanding that training be executed to standards; no compromises, no shortcuts accepted.

■ Enforcing discipline and setting the example.

■ Ensuring personnel in your unit are risk-management trained and practice sound risk management techniques.

All of the above risk management integration initiatives, and others that are ongoing but not listed here, are crucial to improving safety performance. But ultimately, safety is a commander's program and leadership involvement is paramount. Pushing accident rates down and, more importantly, sustaining a long-term downward trend requires aggressive actions to firmly embed risk management into all Army operations as well as developing a risk-based investment strategy.

Changing the culture of an organization may be an evolutionary process, but we can completely integrate risk management into ours if we persistently execute one mission at a time--every mission, every level--to the risk management standard. Success in making risk management a part of the Army's culture will enhance combat readiness by ensuring that soldiers are not injured or killed in preventable accidents.

—Ms. Jane D. Wise, Public Affairs Officer
United States Army Safety Center,
DSN 558-1129, (334) 255-1129,
wisej@safetycenter.army.mil

Accident briefs

Information based on *preliminary* reports of aircraft accidents

AH64

Class C

A series

■ During traffic pattern work, No.2 engine failed and No.1 engine and main rotor system experienced a momentary droop. Aircraft entered autorotation for landing. When No.1 engine took up the load, the main rotor system experienced overspeed. Aircraft was then landed without further incident. Damage to one main rotor blade confirmed. Possible damage to drive train.

Class E

A series

■ Pilot's Night Vision System failed during day system training flight. Aircraft landed and shut down without further incident. Replaced PNVS.

■ While on short final, oil bypass utility hydraulic caution/warning light illuminated, followed by oil low utility hydraulic light. Aircraft was shut down without further incident. Replaced switch.

■ During run-up, just prior to taxi, HARS system started fluctuating, heading (HSI) plus or minus 60 degrees, altitude/horizon line plus or minus 30 degrees. This resulted in DASE uncommanded inputs and eventually DASE channels disengaging. Aircraft was shut down without further incident. Replaced HARS.

D series

■ During runup checks, utility hydraulics PSI indicated 6,000 PSI. Exceedance file indicated Utility Hyd 3,300 PSI and Utility Hyd 3,400 PSI. Aircraft was shutdown without further incident. Replaced manifold pressure transducer.

C12

Class A

Series K

■ While on final approach for landing during an instrument training mission, aircraft departed from the approach flight path in a left turn with a rapid rate of descent and was lost from approach radar. Aircraft was found crashed in a remote area. Two fatalities. Aircraft destroyed.

Class E

T series

■ During takeoff, the No. 2 engine ITT indicated 800 degrees Celsius. Torque dropped to 1950 FT PDS. Aircraft returned to home station for landing without further incident. Maintenance determined that pre-formed packing (o-ring) in groove base of housing flange on low pressure bleed valve failed and caused blockage of valve. Maintenance personnel replaced pre-formed packing.

C23

Class A

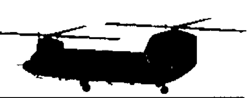
■ While flying in the vicinity of severe thunderstorms, aircraft control was lost and aircraft broke up in flight. Aircraft destroyed. Twenty-one fatalities.

Class E

B series

■ No. 2 right engine N1 dropped to 89 percent on rotation. Torque dropped to 100 lbs. No other indications. Aircraft yawed to right. Fluid was seen streaming from No.2 engine nacelle. Engine shut down and aircraft landed normally on single engine.

CH47



Class D

D series

■ The pilot started to make turn to downwind leg of the traffic pattern when the aircraft flew through a flock of birds. A bird struck and broke the center windscreen. The aircraft was returned to the airfield and shutdown. No further aircraft damage was noted during postflight. Center windscreen replaced.

Class E

D series

■ During aircraft run-up, a hydraulic leak was noted in the vicinity of the ramp area. Aircraft was shut down and explored further for cause of the leak. Maintenance replaced hydraulic line. Maintenance checked and found OK.

OH58

Class C

D-R

■ After entering brownout conditions, aircraft made a hard landing. Main rotor blades flexed down and made contact with the FM homing antenna. All four main rotor blades and FM homing antenna were damaged.

D(I)

■ During landing, mast torque went to 128 percent for 4 seconds duration.

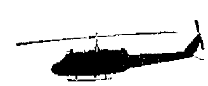
D-R

Class E

■ While conducting hover checks, the crew noticed binding in the cyclic aft quadrant. The aircraft was landed and checked for obstructions around the cyclic controls. No obstructions were found. When a second flight control check was performed, the binding was still present. Maintenance inspection revealed three pitch change links improperly installed.

■ During NVG training flight, aircraft experienced an Engine Chips Freewheel Caution warning light. Attempts to clear the chip detector were unsuccessful. The PC declared a precautionary landing, and the aircraft was landed in a field without further incident. Post flight revealed that the chip detector had fallen on the engine deck and grounded itself.

UH1



Class C

H series

■ The No.1 FM antenna separated in flight and struck the tail rotor assembly. Aircraft was landed without further incident. Post flight inspection revealed damage to the tail rotor assembly, 42 and 90 degree G/boxes and No.1 FM antenna.

UH60

Class B

A series

■ Chalk 3 of 3 encountered a white-out condition while entering landing zone and struck a tree with all four main rotor blades. All four blades require replacement.

Class C

A series

■ Following training check ride, flight inspection revealed damage to the intermediate gearbox cover associated with main rotor blade contact. Replacement of all four main rotor (blade) spindles required as a contingency due to lack of evidence of damage to any one of the 4 blades to corroborate contact. Suspect damage occurred during abrupt (possible hard) landing iteration.

■ While performing an MOC to assume stand by duty, the crew performed a HIT check on the #1 engine, the crew heard a low aerodynamic hum, followed by a shudder in the aircraft, a loud pop, and the aircraft lurched. The PC preformed an emergency engine shut down. The #1 engine Np reached 130 percent (for 1 to 2 seconds) prior to collective full down. The #1 engine was shutdown , followed by the #2, without further incident. Inspection revealed damage to the #1 engine, high speed shaft, L/H input module, and inlet guide vanes.

Class E

A series

■ During cruise flight, crew noticed the smell of burning electrical components. SAS2 and RGYR capsule lights illuminated on AFCS panel. The system was reset and all visible connections/cables checked with no visible sign of electrical failure or fire. After reset, the smell of burning and the failure lights returned. The aircraft was landed with no further incident. Maintenance replaced the digital computer.

■ After departure, crew detected fumes in the cockpit and cabin. PIC aborted the mission, returned to home base and shutdown the aircraft. Maintenance discovered a hole burnt in the power circuit card of the comparator signal data converter (SDC) underneath the pilot's seat. Maintenance personnel concluded that water got into the comparator SDC while the aircraft was being washed, causing the electrical connections to short. Maintenance replaced the comparator, performed a MOC and released the aircraft for flight.

MH6

Class A

J series

■ While at an out-of-ground hover, the main rotor system came in contact with an obstacle. The aircraft crashed and was destroyed. The pilot received serious back injuries, and the IP and the passenger received minor injuries.

Shipboard Ops: AFCS On or Off? In reference to the March 2001 issue article, **"Shipboard Landings are a Wild Ride"**, we apologize for any miscommunication on our part in reference to the sentence "Turn off AFCS". When conducting shipboard operations please consult the appropriate operators manual, TM's, FM's, NATOPS, etc, for the correct operation of the AFCS when operating on and off ships. Ships do pitch and roll, we recommend caution. **—Commander Bret Gary, USN, JSHIP Navy Deputy Director, DSN 342-4936**

IN THIS ISSUE

POV Fatalities

through 30 April

FY01	47
FY00	56

U.S. ARMY SAFETY CENTER

Flightfax is published by the U.S. Army Safety Center, Fort Rucker, AL 36362-5363. Information is for accident-prevention purposes only and is specifically prohibited for use for punitive purposes or matters of liability, litigation, or competition. Address questions about content to DSN 558-9855 (334-255-9855). Address questions about distribution to DSN 558-2062 (334-255-2062). To submit information for publication, use fax 334-255-9528 (Attn: Flightfax) or e-mail flightfax@safetycenter.army.mil Visit our website at http://safety.army.mil

Gene M. LaCoste
Brigadier General, USA
Commanding